

MotorWeek

Green Plants

JOHN DAVIS: With so much current attention focused on the green vehicles, with new alternative fuels, hybrids and advanced power trains hitting the streets every day, it's easy to overlook the efforts by carmakers to improve the way cars and trucks are made. Manufacturing practices have a tremendous impact on every car's lifelong environmental footprint, so here's a look at three companies for whom the green highway starts right at the factory door.

JOHN DAVIS: Or in the case of Ford Motor Company's Dearborn Truck Assembly Plant, it starts on the factory roof. Ford's historic River Rouge complex now boasts the world's largest "green roof", over 10 acres of water-soaking sedum plants that mimic nature to treat and disperse the factory's stormwater runoff, with the added benefit of helping to cool the massive building and double the lifespan of the roof.

Amazingly enough, the \$18 million dollar project, completed in 2003, actually saved Ford more than \$30 million over the cost of a traditional chemical water treatment plant and continues to rack up cost savings as it reaps environmental benefits.

Numerous skylights and light metering glass structures on the roof act as prisms to disperse outside light into the factory, providing more natural environmental conditions for the line workers and allowing Ford to turn off some overhead lights to save energy.

This idea is not new for Ford: Henry himself specified a glass wall in the original Dearborn Glass Works in the 1930s and that historic building is still in use today.

The River Rouge site also uses solar panels and thermal energy to provide some power and hot water for its buildings and has a materials recycling program to reduce waste throughout its manufacturing operations.

But no one takes recycling more seriously than Subaru of Indiana's Assembly Plant, home of the Outback, Legacy and Tribeca. This was the first U.S. auto assembly plant to achieve zero-landfill status, meaning they throw away less garbage each year than the average American household.

TOM EASTERDAY: Most automakers, including Subaru, were very concerned about the middle of the lifecycle of the automobile...alternate fuels, and trying to decrease our dependence on foreign oil and so forth. And a lot had looked at the end of the lifecycle and making sure vehicles were recyclable, but very few were looking at the beginning of the lifecycle. So we decided here at Subaru of Indiana to focus on that because we wanted to eliminate all the possible environmental risks in our operation.

JOHN DAVIS: Relying heavily on the input of their own employees, and holding department managers accountable for every pound of waste, SIA developed a recycling program like no other: Every potential waste product, from welding slag to rubber bands to wiring harnesses...is repurposed, reused or recycled. The same piece of packing foam can make dozens of trips to Japan for instance. Cafeteria waste is

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composted into landscaping mulch, and this window-cutout scrap metal becomes a gas filler flap on the finished car.

DENISE COOGAN: There's always room for improvement, we never rest on our laurels and it's just little bitty things that have really added up to what we have today.

JOHN DAVIS: And the result is staggering: this one factory recycles millions of pounds of cardboard, steel and various forms of plastic each year. But to dispose of that much material, Subaru needed a little help. Allegiant Global answered the call and set up their own operation on-site.

MATT GREEN: So what we do is take everything that's not used on the car and we make sure that it has an environmentally-viable, environmentally-friendly home for it, whether that be a re-use, recycling or repurposing program for it.

JOHN DAVIS: Then there is BMW Manufacturing in South Carolina, which has found an innovative way to power their plant...and proof that one man's garbage is another's gold.

BRIGGS HAMILTON: We opened the plant here in 1994, we were using electricity exclusively from duke energy and the epa came to us in 2001 and said: did you know that there's a landfill not far from here that could be an energy source for you. And our first thought was, what are you talkin about? You want us to burn what? Because none of us had actually ever heard about landfill gas and how that could be used in an industrial manufacturing plant.

JOHN DAVIS: Landfill gas, a byproduct of decomposing garbage, is about 50% methane, and in most landfills it is simply burned like a giant torch to get rid of it.

Well, it didn't take BMW long to realize the golden opportunity that lay before them, and they made the switch in 2003.

Partner company Ameresco captures the landfill gas, cleans the harmful elements out of it, and compresses it before delivering it 9-1/2 miles to the factory through a specially-constructed pipeline.

The gas fuels his pair of super-efficient turbines that generates 11 megawatts of electricity. In addition, thermal energy from the combustion is captured to make hot water for the plant processes and heat for the buildings.

Waste Management, operators of the Palmetto Landfill, forecast there's enough gas here to supply BMW for the next 30 years.

BRIGGS HAMILTON: We're using a renewable energy to power our plant. 60% of our total energy comes from a renewable energy source that was previously being wasted.

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JOHN DAVIS: The plant's biggest energy drain is circulating fresh air for the paint shop, and here BMW has implemented an air recycling process that reduces the volume of air used by more than 1 million cubic feet and cuts energy use by 30%.

Interchangeable paint cartridges positioned at each robotic spray arm reduce the amount of paint wasted during color changes.

And a new pre-paint treatment called RoDip tumbles the vehicle 360 degrees through each process tank, coating each car more thoroughly yet leaving more chemicals in the tank each time.

The process of assembling cars has evolved as quickly as the cars themselves, and with examples like these factories to follow, maybe all cars will soon be born as green as they drive!